

REMARKS

The Official Action rejects Claims 1, 4, 6-8, 11, 19 and 20 under 35 U.S.C. §103(a) as being unpatentable over a published Japanese application to Yamada Hiroshi bearing Publication No. JP 06229426 in view of U.S. Patent No. 6,296,393 to Toshikazu Yabe, et al. in view of a published European application bearing Publication No. EP000223268. The Official Action rejects the remainder of the claims, that is, Claims 2, 5, 9 and 12, under 35 U.S.C. §103(a) as being unpatentable over the '426 Japanese application in view of the Yabe '393 patent and the '268 European application and further in view of U.S. Patent No. 6,280,095 to Akimi Furukoshi et al. As described in detail below, the independent claims are patentably distinct from the cited references and the rejections are therefore traversed. In addition, a number of the dependent claims include additional features that are also not taught or suggested by the cited references and that, therefore, define additional bases of patentability. In light of the following remarks, Applicants respectfully request reconsideration of the present application and allowance of the amended set of claims.

As an initial matter, Applicants request that the finality of the Official Action be reconsidered and withdrawn as being premature. In this regard, in response to the prior non-final Official Action, Applicants traversed the rejection of the claims that had been examined (Claims 1, 2, 4-9, 11, 12, 19 and 20) and added several new dependent claims (Claims 21-28). In response, the current Official Action was issued which rejected Claims 1, 2, 4-9, 11, 12, 19 and 20 on a different basis from that set forth by the previous Official Action even though none of these claims had been amended in any form in the prior response. In particular, the current ground of rejection no longer relies upon U.S. Patent No. 6,005,025 to Qamar S. Bhatia, et al. as a secondary reference but, instead, relies upon two newly cited references, namely, the Yabe '393 patent and the '268 European application. Since the new ground of rejection was not necessitated by any claim amendment, Applicants submit that the current Official Action cannot properly be made final and request that the finality be withdrawn.

As to the dependent claims that were added in the prior response, Applicants note that the entry of these new dependent claims obviously did not necessitate the new grounds of rejection since the Official Action does not even address the new dependent claims. In particular, the

Office Action Summary does not include new dependent Claims 21-28 either in the listing of pending claims (item 4 of the Office Action Summary) or in the listing of rejected claims (item 6 of the Office Action Summary). Further, the remainder of the Official Action which sets forth the analysis does not address Claims 21-28 in any fashion. Since there is no evidence that the new dependent claims were considered, the new dependent claims could not have necessitated the new grounds of rejection.

Turning now to the substance of the rejections, independent Claims 1 and 19 describe a bearing assembly having a pair of bearing members that are movable relative to one another. The pair of bearing members includes first and second members that define a space therebetween. The bearing surface of at least the first member has a coating of a polytetrafluoroethylene-based material having a thickness of about 0.003-0.007 inch. The coating is also defined to include a thermosetting stabilizer material. The bearing assembly of independent Claims 1 and 19 also includes a grease lubricant that occupies the space between the first and second members such that the polytetrafluoroethylene-based material and the grease lubricant act in conjunction with one another to lubricate the first and second members.

Independent Claims 7 and 20 recite a bearing assembly for a truck pivot joint bearing in an aircraft landing gear. The bearing assembly includes the metallic truck assembly defining an opening and a pin rotatably positioned in the opening of the truck assembly. The bearing assembly also includes a truck pivot bushing positioned at least partially in the opening defined by the truck assembly. The truck pivot bushing has an inner surface proximate the pin such that a space is defined between the inner surface of the truck pivot bushing and the pin. At least a portion of the inner surface of the truck pivot bushing has a coating of a self-lubricating, greaseless material with a thickness of about 0.003-0.007 inch. This coating also includes a thermosetting stabilizer material. As further recited by independent Claims 7 and 20, the bearing assembly also includes a grease lubricant occupying the space between the pivot bushing and the pin.

The primary reference is a published Japanese application for which Applicants previously provided a machine translation. The '426 Japanese application describes a roller bearing having a plurality of balls 3 disposed between an inner ring 1 and an outer ring 2. The

roller bearing also includes holders 4 for circumferentially positioning the balls between the inner and outer rings. As described by the '426 Japanese application, the inner surfaces of the inner and outer rings and the ball may be coated with polytetrafluoroethylene (PTFE). See, for example, coatings 1a, 2a and 3a. Moreover, the space between the inner and outer rings in which the balls reside may be sealed by shield plates 5 and the space between the inner and outer rings that is not already filled with the balls may be filled with a fluorine-type vacuum grease 6.

The '426 Japanese application describes the PTFE coatings to consist of a plurality of islands, separated by recesses. As shown by Figures 2 and 5, for example, the PTFE coatings are not continuous, but are formed of a plurality of discrete islands. As such, particulates in the grease that would otherwise be ground up through contact between the balls and the rings and released as dust (see Figure 6) are now trapped in the recesses between islands of the PTFE coating, thereby advantageously reducing the dust produced during operation.

The '426 Japanese application does not teach or suggest that the PTFE coating includes a thermosetting stabilizer material, as recited by each independent claim. As such, the Official Action cites the Yabe '393 patent. The Yabe '393 patent is directed to a roller bearing having inner and outer races with rolling elements positioned therebetween. Both the inner peripheral surface of the outer race and the outer peripheral surface of the inner race as well as the surface of the rolling element include a grease layer. The roller bearing also includes a lubricant-containing polymer positioned between neighboring rolling elements so as to gradually release its lubricating component over time in order to keep the rolling elements lubricated over an extended period of time. As noted by the Official Action, column 10, lines 20-33 of the Yabe '393 patent describes the lubricant-containing polymer to optionally include a thermoplastic resin and a thermosetting resin to enhance the mechanical strength. The Official Action then equates the thermosetting resin that may be optionally included within the lubricant-containing polymer to the thermosetting stabilizer material included in the coating of the claimed invention.

Notably, the thermosetting resin of the Yabe '393 patent is not included in a coating of a bearing surface of a bearing member as recited by the independent claims. Instead, the thermosetting resin of the Yabe '393 patent is optionally included in a lubricant-containing

polymer that is positioned between the rolling elements, but is not coated upon the rolling elements. Indeed, the Yabe '393 patent notes the importance of separating the lubricant-containing polymer (and therefore any thermosetting resin included therein) from the rolling elements by a grease layer. In particular, column 4, line 66 – column 4, line 15 states:

In this arrangement, the presence of the grease layer 5 allows the lubricant-containing polymer 6 to prevent itself from coming in direct contact with the outer race 2, the inner race 3 and the ball 4 and hence inhibiting the rotation of the ball 4 or the like. Further, since the grease layer 5 is formed also in the clearance between the ball 4 and the outer race 2 and inner race 3, the entrance of a powder generated by the abrasion of the lubricant-containing polymer 6 into the clearance can be prevented. ... Thus, the interposition of the grease layer 5 between the lubricant-containing polymer 6 and the constituent members of the ball bearing 1 makes it possible for the ball bearing 1 to allow smooth rotation at a low torque over an extended period of time.

Accordingly, the Yabe '393 patent not only fails to teach or suggest including a thermosetting stabilizer material in the coating of a bearing surface as recited by each independent claim but, instead, teaches away from the incorporation of a thermosetting stabilizer material into the coating of a bearing surface by reciting that the material containing a thermosetting resin, i.e., the lubricant-containing polymer, should be separated from the bearing surface by a coating, such as a grease layer, in order to achieve the desired performance.

The other references, that is, the '268 European application and the Furokoshi '095 patent, also fail to teach or suggest a coating of a bearing surface that includes a thermosetting stabilizer material as recited by each independent claim. Indeed, the other references were not cited in conjunction with the inclusion of a thermosetting stabilizer material in a coating of a bearing surface but, instead, for their alleged disclosure of other features of the claimed invention. Thus, Applicants submit that the bearing assembly of independent Claims 1, 7, 19 and 20 is not taught or suggested by the cited references, taken either individually or in combination. Since the dependent claims include each of the recitations of a respective independent claim, the dependent claims are also patentably distinct from the cited references, taken either individually or in combination, for at least the same reasons as described above. However a number of the dependent claims include additional recitations that further patentably distinguish the claimed invention from the cited references.

In this regard, dependent Claims 2 and 9 recite that the coating has a solid particulate that is either flocked, powdered, fibrous, flaked or beaded. The Official Action continues to cite the Furukoshi '095 patent for its apparent disclosure of such forms of solid particulates within a coating, such as a PTFE coating. Although Applicants' undersigned representative has reviewed the Furukoshi '095 patent, no reference to the form of particulates included within a coating, such as a PTFE coating, was discovered, including in the portion of the Furukoshi '095 patent cited by the Official Action. Thus, Applicants submit that the recitations of dependent Claims 2 and 9 also further patentably distinguish the claimed invention from the cited references including the Furukoshi '095 patent.

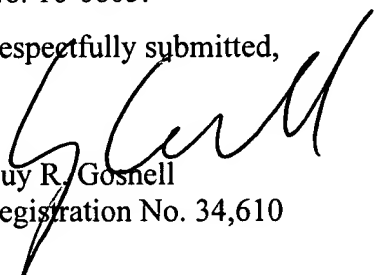
In addition, dependent Claims 21-28 were added in the response to the prior Office Action as noted above. Since new dependent Claims 21-28 do not currently stand rejected, there is no rejection to which Applicants need respond. However, Applicants submit that dependent Claims 21-28 are not taught or suggested by the cited references, taken either individually or in combination. In this regard, dependent Claims 22 and 26 recite that the PTFE-based coating extends continuously along the bearing surface of the first member. Similarly, dependent Claims 24 and 28 recite that the self-lubricating greaseless material extends continuously along the inner surface of the truck pivot bushing. The recitation of a continuous coating is supported by the present application in that the specification describes the coating of the bearing surface of the first member, such as the inner surface of the truck pivot bushing, and Figure 7 depicts a continuous coating 50. As described above, the '426 Japanese application describes the formation of the PTFE coating, not in a continuous manner as recited by dependent Claims 22, 24, 26 and 28, but in islands in order to reduce the dust produced during use by trapping small particulates in the recesses between the islands, thereby actually teaching away from the use of a continuous PTFE coating. As neither the '426 Japanese application nor any of the other cited references, taken either individually or in combination, teach or suggest this additional recitation, Applicants submit that Claims 22, 24, 26 and 28 further patentably distinguish the claimed invention from the cited references.

For each of the foregoing reasons, Applicants submit that the rejections of the claims under 35 U.S.C. §103(a) are therefore overcome.

Conclusion

In view of the the remarks presented above, it is respectfully submitted that all of the present claims of the present application are in condition for immediate allowance. It is therefore respectfully requested that a Notice of Allowance be issued. The Examiner is encouraged to contact Applicants' undersigned attorney to resolve any remaining issues in order to expedite examination of the present application. It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

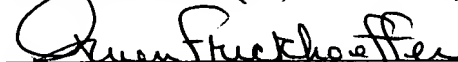
Respectfully submitted,


Guy R. Goshell
Registration No. 34,610

Customer No. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Charlotte Office (704) 444-1000
Fax Charlotte Office (704) 444-1111

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Gwen Frickhoeffter